



City of Rockville, Maryland

D R A F T

WHITE-TAILED DEER MANAGEMENT PLAN

I. OBJECTIVE

The objective of the White-Tailed Deer Management Plan (WTDMP) is to manage the increasing impact of white-tailed deer on public and private lands within the limits of the City of Rockville.

II. BACKGROUND

Rockville's original White-Tailed Deer Control Policy (WTDCP) of tolerance and coexistence was developed in 1995. The policy was developed because residents were concerned about the rising white-tailed deer population and its impact on landscaping and gardens. At that time, the issue was seen more as a nuisance than a problem with deer over-population.

The policy outlined a methodology for coping with an increasing deer population, beginning with conducting aerial surveys as well as analyzing complaints and providing public information, including educational materials and consultations on methods of exclusion and deer repellents.

The policy also outlined a control plan based on the impacts of deer on public safety, including but not limited to auto accidents. The control plan called for population management and reductions when other methods failed and a significant impact initiated the need for conflict resolution.

In 2009, after many years of a tolerance and coexistence policy, increasing impacts prompted the Mayor and Council to form a White-Tailed Deer Task Force (WTDTF) charged with studying and analyzing current white-tailed deer population data and impacts, including the methods and practices used to manage a desired deer population.

The task force was asked to use this information to update the City's WTDCP and to generate specific recommendations to the Mayor and Council.

III. OVERVIEW

The white-tailed deer (*Odocoileus virginianus*) is a large, graceful and attractive part of the vertebrate fauna of eastern North America. As a species, the whitetail is appreciated

and valued for its beauty, food value and for being symbolic of that which is wild and natural in our increasingly urban surroundings. People place many values, both positive and negative, on deer. Whether we find deer desirable is an opinion based on many factors and experiences. People enjoy photographing, watching, hunting, studying and simply knowing that deer exist. Some people suffer economic losses because of deer, while others may derive significant income from their presence.

During the past several decades, the landscape of Rockville has undergone significant change. Extensive suburban development in this once semi-rural landscape has brought about dramatic ecological changes that have affected many species, especially the white-tailed deer.

While quite rare in the early 1900s, the white-tailed deer population has recently reached densities never before seen in many areas. This remarkable recovery is due to effective conservation efforts, the elimination of natural predators and an extremely adaptable animal that is able to take advantage of the habitat changes brought about by urban sprawl and the reduction in agricultural land use. There has also been a reduction in the land area open to hunting and societal changes have led to fewer hunters. The combination of these factors has resulted in a surge of deer populations around the region.

Development practices utilized over the past several decades have fragmented forests and farms, creating ideal habitat for deer. Deer prefer the edges of forests, where they can access both wooded cover and open fields for foraging. Suburban development has greatly multiplied this forest edge, creating what has been described as “a deer factory”.

IV. CONCERNS

The primary concerns of an increasing white-tailed deer population are issues related to public safety and health. These safety concerns include deer vehicle collisions and Lyme disease. Ecological and biological impacts, carrying capacity, as well as direct impacts to residents' landscape comprise the other major concerns highlighted in this document.

Deer Vehicle Accidents

Deer vehicle collisions occur throughout the City of Rockville. Locations with the highest incidence of collisions include W. Gude Drive and Norbeck Road/Route 28 (20 percent of all deer collisions), and Wootton Parkway and Tower Oaks Boulevard comprise another 20 percent. Deer vehicle incidents rose from 1,343 countywide as reported by Montgomery County Police Department in 1994 to 1,841 reported in 2008. State Farm Auto Insurance considers Maryland to be in a high-risk zone with the odds of striking a deer at 1 in 141 during the course of a year, compared with the national average of 1 in 208. In 2008, there were 133 deer-related vehicle collisions in Rockville, 116 in 2009 and 121 in 2010.

State Farm Insurance Company estimates deer vehicle collisions in the state of Maryland numbered close to 32,000 at a cost of \$106.9 million to drivers.

State Farm also reports 21 percent more deer-related collisions nationally in 2009-10 than in a 2004-05 survey, even though vehicle miles driven are up only 2 percent.

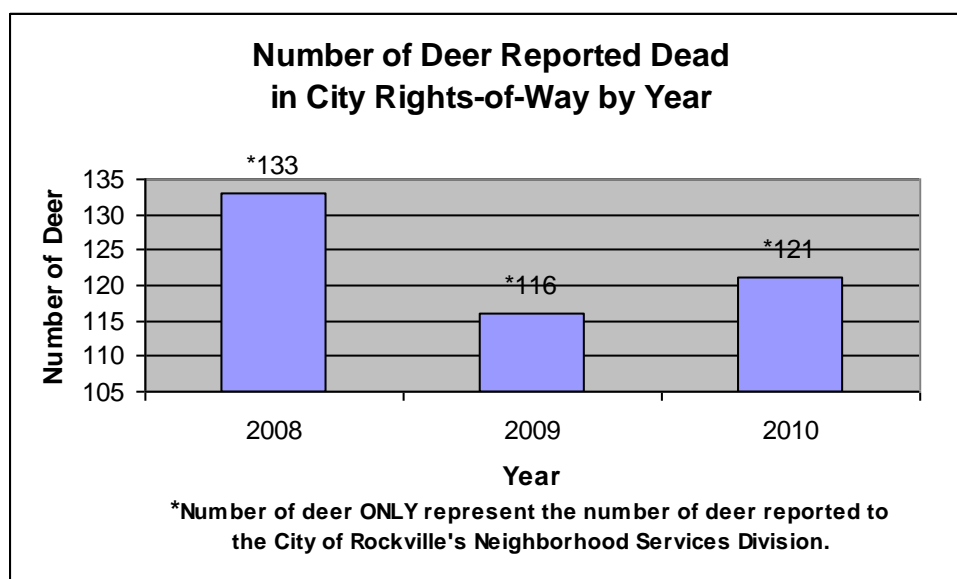


FIGURE 1

Lyme Disease

Lyme disease is caused by the spirochete *Borrelia burgdorferi* that is carried by the blacklegged tick (*Ixodes scapularis*). Lyme disease has affected thousands of people in the United States and is a serious human health concern. Because white-tailed deer serve as a host for the blacklegged tick, there is public concern regarding white-tailed deer and their relationship to the incidence of Lyme disease.

Deer and other mammals, such as raccoons and foxes, serve as hosts for the adult stage of the tick, while small rodents such as mice serve as hosts for the immature stages. A direct relationship between numbers of deer and the incidence of Lyme disease remains unresolved. A June 2003 publication in The New England Journal of Medicine recommends the following strategies for decreasing the risk of Lyme disease and other tick-borne illnesses:

- Area wide application of acaricides (mite and tick pesticides).
- Landscaping to provide desiccating barriers between tick-infested areas and lawns.
- In some settings, the exclusion or removal of deer (Hayes and Piesman 2003).

However, other recent studies regarding Lyme disease and the relationship to deer suggest that controlling deer populations may not effectively control Lyme disease. Ostfeld et al. (2006) concluded the risk of exposure to Lyme disease was correlated positively with the abundance of key hosts of the immature stages of the tick and with critical food resources for those hosts. They suggested that once deer abundance exceeded a low threshold value, further increases in deer density had little if any affect on tick densities. Current best estimates suggest that deer densities must be maintained at <10/square mile (less than 10 per square mile) to observe a reduction in tick densities and associated Lyme disease cases.

The City will continue to monitor further research and development concerning Lyme disease. However, given the numerous negative impacts associated with high deer densities, deer populations must be controlled whether there is a direct relationship between deer and Lyme disease. Currently, the best prevention of Lyme disease is through education that encourages people to use repellents, check themselves for ticks and avoid favorable tick habitat (U.S. Department of Health and Human Services 2005).

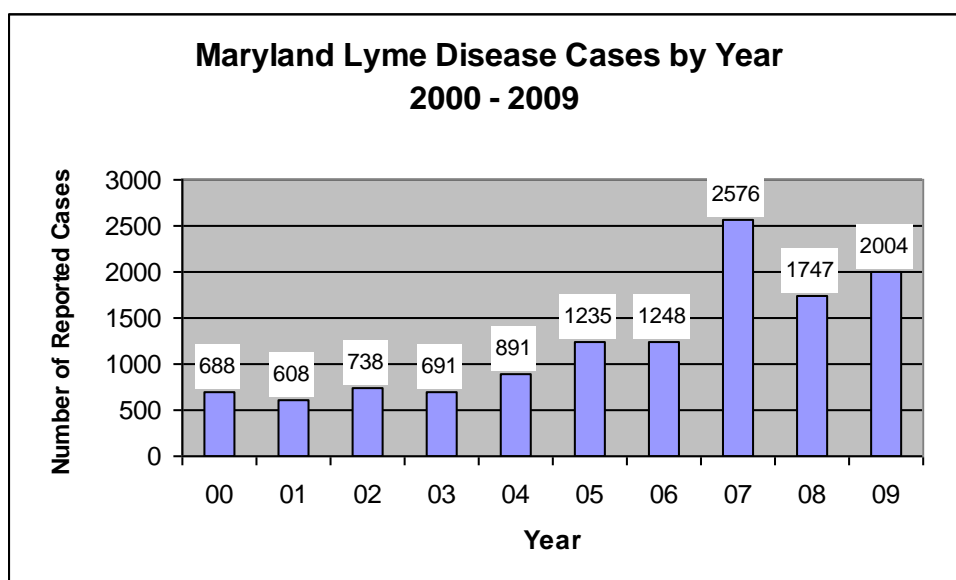
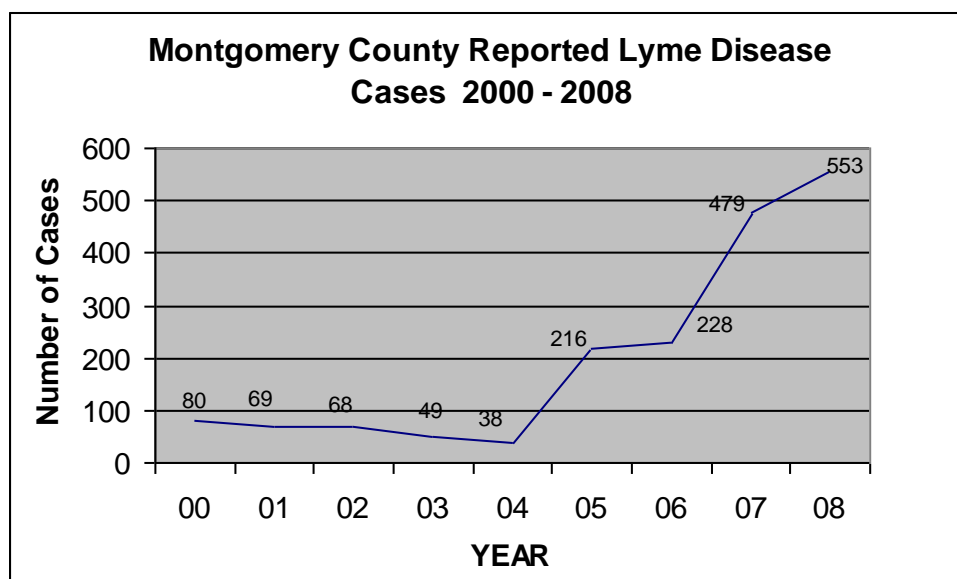


FIGURE 2

Cases as reported by the Center for Disease Control (CDC).
In 2009, 1,466 confirmed cases were reported with 558 more probable cases.
These numbers were combined for 2009 reporting.

**FIGURE 3**

Cases as reported by the CDC. In 2008, 314 confirmed cases were reported with 239 probable cases combined for this chart.

Ecological Impacts

White-tailed deer also cause many negative impacts to the natural environment. In areas of high densities, loss of native bird habitat and damage to native flora and fauna can be found due to over-browsing. Studies indicate that intense browsing from high deer densities can change the forest species composition and the associated wildlife (Alverson and Waller 1997). High deer densities can also increase the density of exotic invasives in natural areas. Excessive deer browsing on native plants reduces the production of native species and allows exotic species to thrive. In addition, deer may spread exotic plants through their feces (William and Ward 2006; Myers et al. 2004).

Biological and Cultural Carrying Capacities (Department of Natural Resources White-Tailed Deer Report)

The number of individuals of a given species that a specific parcel of habitat can support in good physical condition over an extended period of time is defined as the Biological Carrying Capacity (BCC). White-tailed deer have high productivity due to their evolution as large prey for humans, wolves and mountain lions.

Deer reproduction causes populations to exceed the BCC unless productivity is balanced by mortality. When the BCC is exceeded, habitat quality decreases and herd health and physical condition decline (McCullough 1979, McShea et al. 1997). Biologists use herd health indices and population density indices to assess the status of a herd relative to the

BCC. The importance of compatibility between land-use practices and deer populations in Maryland justifies the consideration of another aspect of carrying capacity.

Cultural Carrying Capacity (CCC) is the maximum number of deer that can coexist compatibly with the local human population. The CCC is a function of sensitivity of the local human population to the presence of deer and may be higher or lower than the BCC.

This sensitivity is dependent on land-use practices, deer density and the attitudes and priorities of the human population. Numerous deer vehicle collisions, agricultural damage, home garden complaints and over-browsed forests that reduce recreational opportunities for bird watchers and naturalists due to overabundant deer are all indicators that the CCC has been exceeded. It is important to note that even low densities can exceed the CCC. A single deer residing in an airport landing zone is too many deer for that situation.

Effective deer management aims for a deer population level that will maintain a healthy environment and strike an acceptable balance between people and deer. It's a complex challenge that requires balancing biological, political and social demands. The State of Maryland Department of Natural Resources (DNR) recommends a BCC and CCC in the range of 25–35 deer per square mile.

Browsing of Landscape Plantings and Vegetable Gardens

White-tailed deer will browse on a wide variety of plant material, much of which can be found in the home landscape and commercial landscape, e.g., azaleas, taxus, cherry trees, tulips and roses. Browsing can cause considerable damage, such as deformed shape or death to desirable plants, and antler rubbing by bucks can damage trees and shrubs by creating entry points for insects and disease.

V. POLICY STATEMENT

The City of Rockville will manage the white-tailed deer population using proven techniques and proven deer population management methods while educating and encouraging residents to practice a certain level of tolerance in the face of an increased deer population. The City's Department of Recreation and Parks Department will act as the primary steward of the City's natural resources, including the white-tailed deer population.

VI. WTDTF PLAN RECOMMENDATIONS

The WTDTF will be maintained by a core group consisting of six residents; five professionals in the wildlife and park management field, including a representative from the DNR Deer Management Program; a wildlife biologist; a representative from Maryland-National Capital Park and Planning Commission's (M-NCPPC) Deer Management Program; a professional from the Humane Society of the United States and members from the City's Recreation and Park Advisory Board and the Environmental Commission.

The WTDTF will present recommendations on a yearly basis to the City's Recreation and Parks Department and the Recreation and Park Advisory Board. Recommendations will be based on current available information, which may include Maryland DNR and local county data as well as City data. Additional City deer data may be required as a result of these recommendations.

Recommendations may include, but may not be limited to reduction of deer, scientific research, biological data collection, public surveys, contraceptive studies, Forward Looking InfraRed (FLIR) surveys, investigation of non-lethal control methods and managed hunts.

VII. PLAN ADMINISTRATION AND AUTHORIZATION

The Recreation and Parks Department, Parks and Open Space Division, will direct the organization and administration of the WTDTF. The department will utilize the initial 2010-11 recommendations and the Mayor and Council's yearly recommendations to determine and exercise the appropriate management technique(s) outlined in this plan.

These techniques and methods will be used to eliminate the conflict based on the significance of the current impact(s). The WTDMP will be administered by the Recreation and Parks Department in conjunction with the appropriate agency, when/and as needed through the adoption of this plan by the Mayor and Council of Rockville.

VIII. MANAGEMENT OF THE WHITE-TAILED DEER

Definition

White-tailed deer management consists of all actions undertaken by the City for the express purpose of managing deer populations and/or resolving conflicts from deer activity, whether those actions are initiated by staff or are in response to public inquiries.

Goals

The management of the white-tailed deer shall maximize healthy and natural wildlife activity in accordance with the health, safety and economic concerns of the public.

Management techniques, research and data sought shall be gathered from annual recommendations received from the WTDTF and shall be employed to maintain a desirable balance while minimizing conflicts from deer activity.

Objectives

- Maintain a stable, balanced deer population within acceptable limits between the BCC and CCC. The State of Maryland DNR recommends a BCC and CCC in the range of 25-35 deer per square mile for most developed areas and with a sustainable goal of 20-35 deer per square mile.

- Develop an educational program to provide Rockville residents with information about deer biology and currently available methods to minimize deer/human conflicts on private property.
- Take direct measures to reduce the number of deer/auto collisions by targeting specific areas to make the greatest impact.
- Promote the intrinsic value of deer as a natural resource and provide opportunities for people to enjoy and appreciate this beautiful and important animal.
- Make deer management decisions based upon well-founded Best Management Practices, which will contribute to proper ecological functioning of natural systems.
- Provide a collection of educational material at all public facilities and the Recreation and Parks Department.
- Work with the City's Neighborhood Services Department to obtain accurate information to monitor deer vehicle collisions and take appropriate measures to reduce them where incidence is the highest.
- Obtain the latest information regarding deer counts within Montgomery County, (M-NCPPC) to assist in making recommendations.
- Establish and implement policies and procedures for the efficient, humane and safe removal of surplus deer in specific areas, when necessary. These policies must address the variety of land uses and diversity of societal and ecological conditions that exist around the City.
- Every attempt must be made to address deer management issues in a safe and humane manner as possible.

Methodology

For management purposes, deer activity that results in conflict will be evaluated by the City for the existence of or potential for:

- Impact to public health and safety.
- Impact to public parks and facilities.
- Impact to the environment and private property.

The significance of these impacts will determine the type of management techniques employed, but all actions will follow established conflict resolution procedures. Deer management actions will be based on the following:

- Proven wildlife management techniques.
- Appropriate animal welfare concerns.
- Applicable laws and regulations.

Applicable City, County and State Laws

Under Rockville City Code, Section 14-37, “a person may not catch, destroy or interfere with any wild animals within the City limits.” This code protects white-tailed deer from harm and subsequently there is currently no hunting allowed within the corporate limits of Rockville.

Under Rockville City Code, Section 13-61, “a person may not discharge any firearm, rifle, shotgun, revolver, pistol, air-gun, air rifle, or similar mechanism that is designed to expel a projectile through a gun barrel by the action of any explosive, gas, compressed air, spring, or elastic within the corporate limits of the City whether such mechanism is loaded with blank or live cartridges or projectiles of any kind.” Currently, this code eliminates any form of hunting by a firearm.

Legal responsibility for white-tailed deer is vested with the state of Maryland through Natural Resource Article, §§10-205, 10-301 and 10-415, Annotated Code of Maryland through regulation COMAR 08.03.03.06. The Maryland DNR Wildlife Division provides for deer population management through harvest regulations, which are implemented by establishing the length of hunting season, permitted weapons, bag limits and sex of deer to be harvested.

Supervisory Management

All white-tailed deer conflict actions will be reported and recorded by the City.

- The Neighborhood Services Department and the Department of Recreation and Parks will monitor complaints about nuisance deer and deer/vehicle incidents.
- These Offices will make information available specific to these complaints, as well as carrying out the management tactics.
- The Recreation and Parks Department shall assist the Neighborhood Services Department with the collection of data and the monitoring of effects of the white-tailed deer on parks and natural areas, and coordination with area-wide deer control plans and procedures.

Memo of Understanding

The City of Rockville shall request cooperation in partnership with the State and designated agencies/departments of Montgomery County, including M-NCPPC, with the application of management techniques. The City should pursue a Memo of Understanding between the City, M-NCPPC and the state of Maryland as part of this cooperative effort in the management of white-tailed deer.

Professional Assistance

The City shall consult with an expert wildlife biologist, with white-tailed deer conflict resolution experience, to assist with the overall objectives of the City’s WTDMP or shall

utilize appropriate DNR assistance. The WTDTF may also request this expertise to counsel their annual recommendation for deer management.

IX. PROCEDURES

All public concerns about deer activity creating conflicts will first be investigated in the field by City staff using the methodology below.

Research

Surveys will be pursued to compile pertinent information concerning the white-tailed deer population in and around the City of Rockville. Identifying the relevant information and making it available to the public and to those specifically involved in management decisions is of vital importance to the goals and objectives of this plan. This information, along with other types of monitoring, will be used to identify specific areas of impact to be evaluated on an ongoing basis for the potential of conflict/impact in the urban environment.

Public Awareness and Education

Complainants, adjacent landowners and homeowners/civic associations, where they exist, will be informed immediately of policies and procedures regarding the management of deer. An interpretive brochure covering deer management and City management policy and procedures will be made available to adjacent landowners and homeowners/civic associations, where they exist.

Maintain deer related information on the City's Web site with links to state and local policies, recommendations and data. Make available links to current trends in management techniques, including population control through managed hunts and contraception. Provide supporting data pertaining to white-tailed deer population and deer vehicle collision statistics, Lyme disease, chronic wasting disease, ecological and biological impacts on public and private lands in the City and in surrounding areas. See section XII, Public Information and Education, for further information.

Deer Conflicts on Private Property

- When there are impacts to private property, the property owner will be counseled to accommodate the deer and tolerate some inconvenience. Interpretive information on deterrence exclusion methods will be provided. Citizens must implement specified exclusion measures, where practical, before other actions will be considered. The City shall assume **no** legal liability for these impacts.
- In situations where exclusion measures are not feasible on private property, the City may take actions on municipal parkland to address significant impacts on private property. Such actions will follow established conflict resolution procedures, beginning with exclusion and proceeding through removal of the deer.

Deer Conflicts on Public Lands

- When there are impacts to public areas, the City may decide to take management actions to protect resources. However, damage to trees, shrubs and other plants on parkland, in the absence of other impacts, does not necessarily constitute reason for management. A field investigation of habitat suitability may be conducted to determine overall impacts to natural resources.
- If it is determined that the deer population is unsuitable by state recommendations and general over-population could be contributing to unsafe road conditions/deer vehicle collisions or other safety hazards, the City may implement population control measures, if practical, to limit the increased populations. If this is not practical, the City will follow established conflict resolution procedures in making decisions to make sure all practical methods are explored, beginning with exclusion measures and ending with the removal of the deer. Whatever action is taken, it will be conducted in as humane a manner as possible, with due regard for the safety of Rockville residents and the welfare of wildlife habitat.
- In roadways adjacent public lands, various traffic control devices, including deer crossing signs and warning lights, may be considered as supplemental tools to any management techniques that may be implemented.
- If the habitat is found to be unsuitable and if exclusion methods fail or are infeasible or if a safety threat persists, population management actions will be taken as described below. Whatever type of action is taken, it will be conducted in as humane a manner as possible, with due regard for wildlife habitat welfare and the safety of citizens.

Evaluation

- The City will monitor and evaluate our WTDMPP through deer counts (fly-overs), deer vehicle accident data (supplied by the City's Neighborhood Services Division), and complaints received by the Rockville City Police Department and Recreation and Parks Department.
- The City will also monitor and evaluate the M-NCPPC and State of Maryland DNR white-tailed deer management programs for success and failure, and implement action specifically beneficial to the City's objectives.

X. PROCEDURES FOR DECISION MAKING

The WTDTF and Recreation and Parks, Parks and Open Space Division, will gather the best information and data available to help the WTDTF identify current management issues and needs. When management needs are identified, the WTDTF will first consider the least intensive non-lethal management options available, such as education efforts, to address those needs. Where these options have failed to address management needs in the past or appear inadequate to address current management needs, the WTDTF will consider recommending progressively more intensive management practices, as necessary.

Each year, the WTDTF will assess the effectiveness of its past recommendations and repeat the decision making process above. In doing so, the WTDTF seeks to implement an adaptive management strategy that effectively manages white-tailed deer/human interactions while minimizing the amount of human intervention necessary.

Yearly WTDTF Decision Making Process

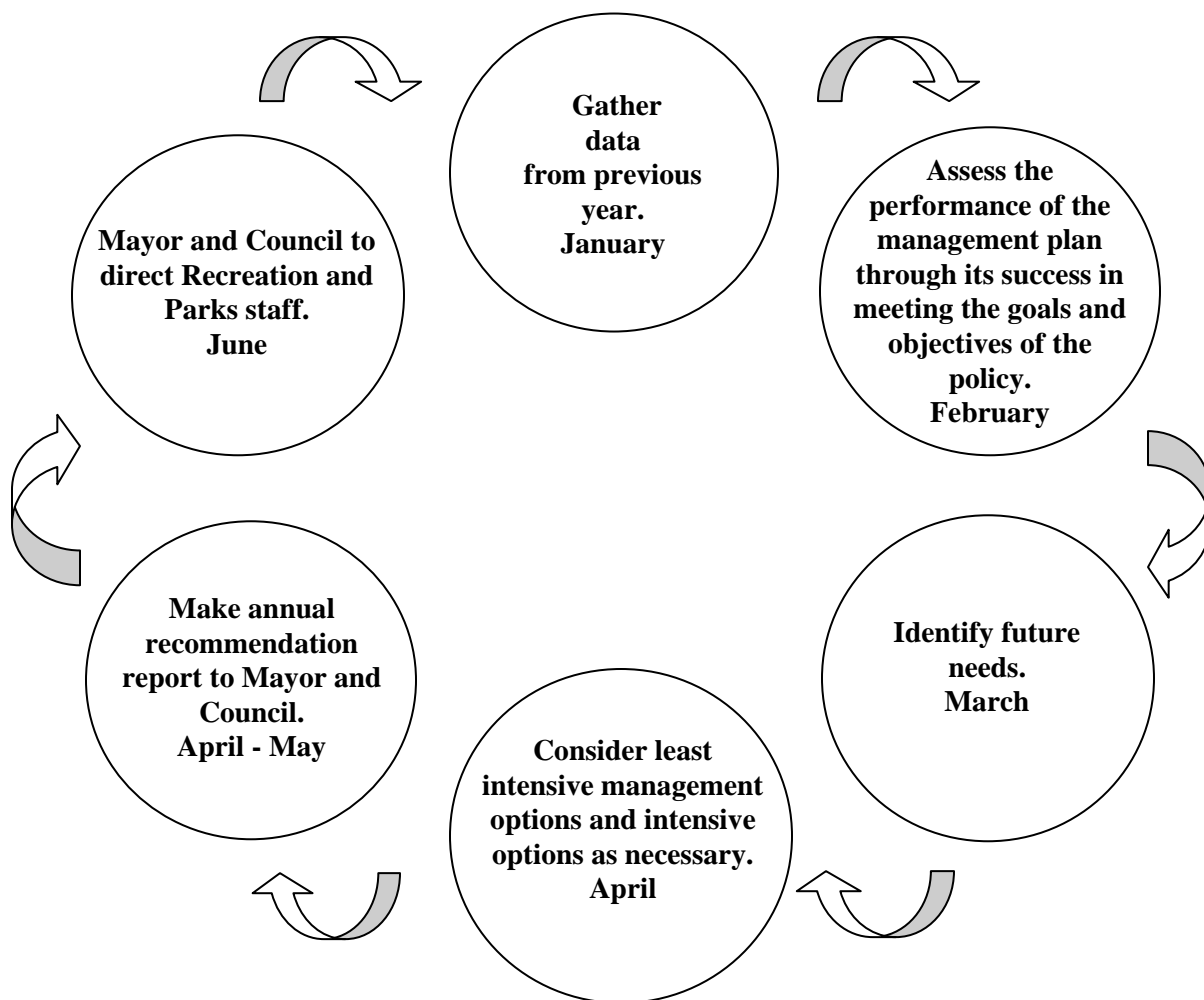


FIGURE 4

XI. MANAGEMENT TECHNIQUES

The City may consult with Maryland DNR on the following recommendations to assure the proper actions are taken.

Deterrence

Any device or substance, including but not limited to taste or odor repellants, designed to repel deer from the area where they are not desired.

- **Effectiveness**
Some devices may be effective if applied to a localized area frequently. Effectiveness is negatively correlated to deer density and may diminish over time as deer adapt to them. Repellants are humane to the animals and widely available on the market to consumers.
- **Application**
Deterrence techniques may be costly and require frequent application.

Fencing or Physical Exclusion

A fence or other barrier that permanently protects resources threatened by deer or prevents deer from accessing areas where they are not desired.

- **Effectiveness**
Physical barriers are highly effective resource protectors that virtually eliminate deer from a specific localized area. These exclusionary methods may negatively impact the movements of other desirable species.
- **Application**
Individual plants can be protected with small screens or larger plots of land hosting rare species may be protected with fences that meet specifications for deer control. The installation and maintenance of these devices may be costly.

Direct Reduction

The removal of deer by specially certified and permitted hunters using lethal projectiles administered through a controlled and managed hunt in areas where hunting is not presently permitted.

- **Effectiveness**
Direct reduction is highly effective for reducing current deer population over time, as well as population growth if applied regularly. Estimates of the current deer population are required to set reasonable reduction numbers and to establish the effectiveness of the reduction.
- **Application**
Implementation of this technique would require a courtesy review by coordination with Maryland DNR and enforcement agencies for the state of Maryland, Montgomery County and coordination with the City's Police Department, Neighborhood Services and Environmental Management Division.

Reproductive Controls

Any substance or procedure, including but not limited to oral contraceptives, implantation of microencapsulated hormones, surgical sterilization and immuno-sterilization targeted at reducing birth rates in animals.

- **Effectiveness**

Although some options are currently being developed, there are presently no effective options that are both effective legal and safe for the animals. The need for frequent application to achieve physiological effectiveness, to capture and handle animals for precise annual timing to administer contraceptives, and the current cost of contraceptive programs renders this option impractical.

- **Application**

Currently this technique is not available in an approved and safe application. It is cost prohibitive (\$800 to \$1,000 per deer) and carries only short-term benefits.

Reapplications of most contraceptives are typically needed within a two-year period. These current methods require direct application and capturing the deer to do so. Future research of these controls may allow a better solution and, therefore, this method should be considered when it becomes available in an efficient application that is also cost effective

XII. PUBLIC INFORMATION AND EDUCATION

Description

The task force recommendations to the Mayor and Council make it clear that public information is an important part of the management of deer-human conflicts in the City. A lack of understanding of deer biology and ecology appears to be compounded by misinformation and misconception regarding the available management options.

It is the aim of the information and education component to clarify deer-related issues, biology and ecology and make information readily available to the general public.

Actions

The following actions are intended to better inform and educate the public and to address commonly expressed concerns related to deer.

- Develop an informational brochure on white-tailed deer, including information on deer biology, ecology, deer-human conflicts and the management options that may reduce or end those conflicts. This brochure should provide a list of agencies and organizations involved in the issue, and how each may be contacted. It should be distributed throughout the City in all recreation centers, the Nature Center and other government office buildings, and be available online and to the homeowner associations and all Rockville residents.

- Offer educational programs through the Department of Recreation and Parks and interested organizations such as garden clubs. These programs would include information similar to the brochure, and would also serve as a forum for exchange of new ideas and opinions for the task force to process.
- Develop and maintain, through the Public Information Office, a plan to provide timely and relevant information on deer, suited to the needs of the season. Information would be distributed through print, Web and social media, as well as broadcast segments on Rockville 11 (cable channel 11). Some information could be issued to media, but most educational and communicative information would be distributed through City communication tools such as Rockville Reports, the Web and Facebook.
- Develop and produce an exhibit display on deer issues and the management plan. This display could be housed at the Nature Center and rotated through the community centers and other public buildings, and other locations if requested.
- Produce and distribute an annual update on deer management activities and information for all interested parties. Note all significant accomplishments and milestones reached during the preceding year.
- Develop a deer management Web site, with appropriate links, to disseminate information through the increasingly popular medium of the Internet.

XIII. REFERENCES